Henry Ford Hospital Medical Journal

Volume 5 | Number 3 Article 2

9-1957

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Grover C. Penberthy

THE REFLECTION OF A SURGEON IN THE PROGRESS OF HIS ART*

GROVER C. PENBERTHY, M.D.**

The gracious invitation to present the Roy Donaldson McClure Lecture I consider a very particular honor, but my acceptance was with a feeling of humility. The previous speakers on this occasion to honor the memory and professional contributions of Dr. McClure were men who made singularly outstanding contributions to the surgical field as well as close personal friends of long standing. Tonight the essayist speaks from the latter point of view — with a long association and a deep admiration and affection for him. I know I am joined in these feelings by his many local friends and associates.

Dr. McClure not only lived in a period of great progress in surgery, but was a vital part of it. He did not simply watch the parade of progress, but marched at the head of it. He came by his spirit of leadership and interest in medicine naturally; his father, grandfather and great-grandfather having been doctors before him; a rich heritage. In medical school at Johns Hopkins, he came under the influence of the big four — Osler, Welch, Halsted and Kelly. Later on he studied under Alexis Carrel[1] at the Rockefeller Institute. With all of this background of the best in medical forebears plus a splendid galaxy of teachers, Dr. McClure was a modest person, kindly and always willing to help, which brought forth the best efforts and cooperation of his students, house officers and associates. A naturally reserved and dignified person, he appeared to some unapproachable, but his dedication to the best in medicine, his loyalty and kindness, was obvious to those who knew him at all well.

Let us picture the state of surgery when Dr. McClure began his professional career. Certain areas of the body were forbidden to the surgeon. The peritoneal cavity had been frequently entered and laparotomy was a common operation. The chest, cardiovascular system, the cerebrospinal tract and the pancreas were not considered possible of surgical approach. The common method of introducing fluids was by proctoclysis or hypodermoclysis. Blood transfusions were rare. The development of modern methods of fluid and electrolyte replacement was not well considered until the 1920's even though Andries and McLean,[2] and Hartwell and Hoguet[3] in 1912 showed that animals with obstruction lived longer when intravenous salt solution was given. Credit for the modern concepts of fluid balance must go to Dr. Coller and his associates.[4]

It was in 1924 that Davidson[5] under Dr. McClure's stimulus developed the tannic acid method of treating burns. This was a decided step forward, for even if it is not now a commonly accepted treatment, it not only focused attention on the care of the burned patient, but indicated the importance of fluid replacement of the burned patient. Along with other fluids, transfusions of blood were administered to these patients, and this stemmed from one of Dr. McClure's early interests, the transfusion of whole blood. With Eugene Pool in 1910,[6] while a house officer at the New York Hospital, he developed a method for transfusion by direct suture of the donor's vessel to the recipients. This was the first type of transfusion I saw when an intern at the City Hospital in New York. Dr. McClure[7] reported 150 transfusions in 1917, and

*The Roy D. McClure Lecture presented April 16, 1957.
**Detroit, Michigan.

recommended transfusion for the treatment of shock. Transfusions today are routine, perhaps almost too much so, but it is almost unthinkable that one could do extensive surgery without the transfusion of blood.

Despite the clear cut studies carried out by Dr. McClure and his associates in Baltimore and in New York which indicated the possibilities of extensive blood vessel surgery, the development of this field was long delayed. Many factors were responsible for this; safety factors for the patient were not so well developed, particularly in the direction of anticoagulants, now used routinely. Infection was more difficult to control so that a great deal of the surgeon's work was taken up by handling of these problems, many of which were time consuming and arduous. Adequate control of fluid and electrolyte balance was not sufficiently considered. Blood was not readily at hand, and the dangers of transfusion were greater. Transfusion then was no simple matter and was performed first by suture of the donor's vein to that of the recipient. Later this was simplified by the use of syringes to draw the blood from the donor and to inject it into the recipient. This was a major procedure and preformed in the operating room. Anyone who has not seen this performance would hardly believe that it served the same purpose that the present day transfusion fills. Whole blood without anticoagulant was used. When anticoagulants, chiefly sodium citrate, were utilized this permitted less rapid infusion of blood and a series of procedures were developed. Instead of the use of multiple syringes, such were developed which allowed withdrawal of blood and its injection with the same syringe and reduced the number of necessary personnel. Many modifications of such instruments were developed. Vacuum tubes were used and also complicated closed systems for drawing and giving of blood were designed. Blood was always freshly used. Banking of blood is a relatively late development and Dr. McClure interested himself in this problem, carrying out extensive studies with Dr. Hartman on the preservation of blood.

The difficulties in the field of blood transfusion and in vivo anticoagulation alone were enough to retard vascular, and especially cardiac surgery. In addition, the many other problems which present themselves to a busy surgeon such as Dr. McClure, kept him engaged in doing the obvious, necessary and more readily feasible operations.

The surgery of the thyroid gland took tremendous steps forward in Dr. McClure's time and he contributed greatly to this advance. The removal of the thyroid, especially in Grave's disease, the then prevalent type, was attended by a high mortality; minimal thyroidectomies were the rule, attended by a high recurrence rate. Dr. McClure recognized the effect of iodine on this disease and was for many years active in developing the use of iodized salt in the prevention of simple goiter. Today, with the use of iodine and the antithyroid drugs, thyroidectomy is ordinarily not a serious problem.

Since Dr. McClure was a resident under Halsted it was only natural that he should be interested in carcinoma of the breast. Careful dissection, exact hemostasis and wide removal of the breast, pectoral muscles and lymph nodes of the axilla, with careful handling of the tissue, was not only practiced by Dr. McClure, but he also played an important role in disseminating the principles of Dr. Halsted by his teaching and writings. Variations on this theme have been presented, such as more extensive removal of the lymph nodes in the mediastinum and neck and combinations of x-ray and surgery, but their net added effectiveness is still open to question. The procedure of choice and with the best results still seems to be that which Dr. McClure practiced.

Dr. McClure was commanding officer of the 33rd Evacuation Hospital during World War I and went to France with this Unit. It was at this time that an infection of the pleural cavity was a common reason for operation. In certain forms a 70% mortality of cases operated upon was reported in the Medical History of World War I;[8] at Camp Dodge where I was stationed late in 1917, it was about 75%. It was Dr. McClure's close friend, Dr. Evarts Graham, the 1956 guest speaker, and recently deceased, who, as a member of the Empyema Commission,[8] helped to establish the principles of care for patients with empyema, which eventually lowered the mortality to less than 4%. The operation for this condition was a common one in Dr. McClure's early days. In the period 1926-36, Dr. Benson[9] and I collected the cases from Children's Hospital and reported 5,868 patients classified as having had pneumonia, and of this number, 407 or 7%) developed empyema which required surgical drainage. Today in the same hospital approximately 6 cases are reported each year. In 1941, after the advent of chemotherapy, 144 patients[10] were reported with a mortality of 2.1%. There are many young surgeons in training today who have never seen a case of empyema. This has resulted from the use of sulfa drugs and antibiotics in early control of primary lung infection, such as lobar and bronchopneumonia. While the use of antibiotics has drastically lowered the incidence of empyema, those cases that we do see on the rare occasion are somtimes more troublesome because of the changes in bacterial flora involved, due to previous antibiotics used, and partly because of the tendency for these cases to be treated medically longer and referred to the surgeon later than formerly, and often after the patient has become debilitated.

In these same early years of Dr. McClure's surgical experience, hematogenous osteomyelitis was a common condition requiring surgery. In 1928 and 1929 it is noted that 101 operations were performed at either the Children's Hospital or one of the associated institutions, and there were frequent crippling recurrences. In the past several years few operations have been performed for this condition.

For years we conducted a convalescent hospital at Farmington, which was largely populated with these and other cases resulting from infections. Today Farmington is closed, the case load not warranting its continuance. Many of these previously common infections are rarely, if ever seen today.

Wound infections are rarer and when seen are much easier of control. You all know the reason for this. It is due to the use of sulpha drugs and antibiotics. Dr. McClure, as a member of the Surgical Section of the National Research Council during World War II, occupied a place of leadership in the application of these aids in the control of infections. One of his students, Dr. William Altemeier, now Professor of Surgery at Cincinnati, has contributed extensively to our knowledge of the use of antibiotics and the sulpha drugs and is an outstanding authority in this area. This was not his only important contribution during World War II, he having served on the Amputee Committee, which stimulated the development of our modern and effective prosthetic devices.

Reference has already been made to Dr. McClure's studies with Carrel. Methods of end-to-end suture, and the transplantation of organs, indicated not only the possibilities of vascular surgery but laid the foundations for the advances in this area which have initiated a whole series of operations now performed, which fifteen years ago were not thought to be possible. Recently at the Central Surgical Association meeting

Dr. Szilagyi,[11] who served his apprenticeship under Dr. McClure, reported 264 cases of replacement of arteries by homografts. Dr. Blalock's development of the operation for correction of the Tetrology of Fallot utilized these same principles.

Intestinal obstruction in the days of the young surgeon McClure was a highly lethal problem, the mortality being somewhat in the neighborhood of 50%. When a case of obstruction was presented in the early 20's, there was but one edict — operate and operate fast. The longer the delay, the less chance the patient had for survival; or at least this was the concept. In 1924 Robertson Ward[12] developed a method for suction drainage of the stomach, and a few years later Owen Wangensteen[13] began his studies on duodenal drainage, negating as these procedures did, the need for immediate surgery. This was a courageous undertaking and one of the outstanding surgical contributions for the period. Great criticism was raised against the concept that by the use of suction drainage patients with obstruction might be saved. It is significant that when Wangensteen made his clinical studies on obstruction, animal experimentation did not play an important role. After the demonstration that control of distention seemed the key to the problems of obstruction, Taylor, Weld and Harrison,[14] Herrin and Meek,[15] and Burget, Martzloff, Thornton and Suckow[16] showed that if distention in animals was controlled, the animals lived. It was further demonstrated that even without obstruction, if the gut was distended, animals died with signs of obstruction. This was a clear cut demonstration of corroboration of clinically developed concepts by animal experimentation. This indicated quite clearly the sequence of events in intestinal obstruction and gave evidence that, without distention, the sequelae of simple obstruction did not occur. Extension of the therapeutic effects of the control of distention was further presented here in Detroit at the Receiving Hospital by our own Dr. Charles Johnston,[17] with the development of intestinal intubation. Now in the presence of obstruction we recognize the necessity for decompression in preparation of the patient for operation.

Dr. McClure recognized and supported the cause of animal experimentation as it applies to clinical disease and fundamental biological principles. When the future of animal experimentation was threatened in this area, he mobilized support to refute the claims of the antivivisectionists. Dr. Johnston, who acted as secretary for the group, supporting the cause of progress in medicine, tells me that Dr. McClure in his finest effective way brought tremendous support not only by his own appearance, but by mobilization of support which only he could have arranged. As an outgrowth of this action Michigan has a statute which recognizes animal experimentation as reasonable and necessary to medical and veterinary progress.

Dr. McClure occupied a position of vantage to view the development of surgery of the nervous system. Dr. Harvey Cushing who had preceded him several years as a resident under Dr. Halsted had already begun to make contributions in this field. Tic douloureux was a most uncomfortable problem for a patient and a hopeless one for the doctor. In 1909, Drs. Spiller and Frazier[18] described a surgical approach for the section of the sensory root of the ganglion of the fifth nerve, which with some modifications is a standard procedure used today. A contemporary of Dr. McClure's at Hopkins, Dr. Walter Dandy[19] published studies on methods of visualization of the

ventricle of the brain in 1918. This opened great possibilities for more accurate diagnosis of intracerebral lesions. Brain abscess was a particularly lethal condition for which there was no adequate treatment.[20] Close friends and associates of Dr. McClure's, Drs. Frazier, Kahn, Dandy, Coleman, Horrax and King, all made contributions to this serious condition. Today, with the advent of better methods for control and prevention of infection, brain abscess is relatively rare. Neurosurgical operations today are common and extensive. I would be remiss if in the mention of the development of neurosurgical procedures I did not mention the role of a specialist which we see seldom today — the neurologist. Dr. William Spiller was one of these, who, while not a surgeon, played a great role in the specialty of neurosurgery. I have already mentioned his role in the treatment of tic douloureux. He directed Dr. Edward Martin,[21] an associate in the Department of Surgery at the University of Pennsylvania in 1911, in the performance of the first cordotomy for the relief of pain of organic origin. This procedure is a standard one for severe unrelenting pain today. It is interesting to quote Dr. Martin as follows: "The surgical task assigned to me by Professor Spiller is to make a transverse incision into the spinal cord roughly 2 mm. in length of similar depth and with its posterior end 3 mm. anterior to the entrance of the posterior root, this cut to be bilateral." Today the neurosurgeon is largely his own neurologist, neurology and psychiatry being more closely related.

Dr. McClure also had a sustaining interest in the early ambulation of the post-operative patient, which interest is reported to have dated back when he was a house officer under Eugene Pool in New York, with encouragement given the patient who was bed-fast to move his lower extremities and the advocation of early rising. Supplementing this early physical exercise and in contrast, he witnessed a complete change in the concept of ambulation, for in his period with Dr. Halsted the postoperative hernia patient was kept inactive in a body plaster cast to permit the wound to heal.

Another field of surgery in which Dr. McClure was interested is that which pertains to the newborn and infant, as shown by his association with Dr. Edward Park[22] in their studies pertaining to the thymus gland in 1913. Pediatric surgery, like cardio-vascular surgery, neurosurgery and thoracic surgery, has made outstanding progress — a major part due to earlier diagnosis, to the better understanding of the preoperative preparation, the interpretation of X-ray films, and anesthesia; this latter due to the medical anesthesiologist's knowledge of the physiology of the respiratory, cardiovascular and cerebral systems. In Dr. McClure's early period in surgery the drop ether method was in vogue, with intratracheal and nitrous oxide-oxygen anesthesia rapidly being explored and developed.

A monument which will stand out as a memorial to our beloved colleague is the Central Surgical Association, founded in 1940, largely through his interest and enthusiastic perseverance in gaining the help and support of some members of the American Surgical Association and others. The part he played is indicated in the following rather lengthy quote taken from the Presidential Address delivered at Rochester, Minnesota, February, 1956, by Dr. Rudolf J. Noer,[23] formerly with Dr. Johnston at the Wayne State University Medical School, and now Professor of Surgery at the University of Louisville. "In our section of the United States the more promising younger surgeons do not have the opportunity for self-expression and stimulation of friendly

and intimate contacts with each other that are open to men of similar abilities and aspirations in other parts of the country. There is real place and purpose for a central (states) surgical association. I know of a dozen eligible, grade A, high-class, young surgeons in Detroit and Michigan who would be excellent material . . . and I have good reason to believe that other cities in the central states have similar groups of eligible men . . . Dr. Roy McClure, speaking on 'The Inauguration of the Central Surgical Association' said, 'My election to this office is probably a token of recognition of a role played in the formation of our society, and while it is true that the concept of the organization originated with me . . . the greater credit of its sound foundation belongs to those Fellows of the American Surgical Association who have agreed to act as its sponsors . . . Some years ago I came to realize that a great many able, well-established, and excellently qualified surgeons had been barred from inclusion in the senior surgical societies, mainly because of the "closed number" policy, while the oncoming generation of young men who have an increasingly better foundation training had even less chance . . . I could not help reflecting on the curious circumstance that of all the important cartographic divisions of our country, the potentially most important one, the Mid-West, was the only one lacking its own surgical society. These considerations made it clear that an unmistakable need existed for a surgical society with its headquarters in the Central and Great Lakes region . . . This society has been projected as a proving ground for young surgeons . . . a stimulus when this is most needed; as a bridge between the time of completion of residency, acceptance by the Boards, and arrival at the period or recognition as surgeons — a time interval during which many young surgeons stagnate through inaction and lack of stimulation by a scientific surgical society . . . I was interested to note that times and people change but little, for those who demurred offered the same objections as those advanced by the opponents of Samuel Gross and the other founders of the American Surgical Association, in 1879. The claim was made then, as now, that with the country full of all sorts of surgical societies there was no need for such an organization'." The Central Surgical Association today is considered an outstanding regional society, with a steadily increasing attendance by members and guests at the annual meetings.

In relating the influence and the part played by Dr. McClure in the progress of surgery since the turn of the century, mention should be made of his interest and contribution in providing opportunities for the training of young men ambitious to gain position in the field of surgery. The following personally known to me, have made names for themselves: the late Edward Davidson and the late Sidney Allen, Francis Chunn, Brian Blades, Henry Harkins, Edward Compere, Samuel Marshall, Conrad Lam, William E. Johnston, D. Emerick Szilagyi, William Altemeier, Laurence Fallis and Brock Brush. I realize that there are many other young men who have benefitted by Dr. McClure's guidance and have made names for themselves, but as mentioned, the above surgeons I knew and have followed their progress with interest.

Far from the least of Roy McClure's manifold accomplishments, in addition to the training and stimulation of the doctors to whom I have just referred, was the development of the organization and philosophies, along with Drs. Sladen, Hartman, Smith, Pratt, Doub, Mateer and others, of this splendid institution in which we are gathered this evening, and which will long perpetuate his memory and his endeavors.

I have related only a few of the changes which have occurred in surgery during Dr. McClure's professional life. The young surgeon of today does not have many of the problems which he daily faced. So many problems were settled that one might assume that the opportunity to make fundamental contributions to surgery is less today. On the contrary, the advances which have been made and with which Roy McClure was concerned, have opened new possibilities for progress.

While he was ever concerned with the best in surgery, I prefer to remember him for his steadfast friendliness. Never one to make friends quickly; no flamboyant spirit his, he held them with his quiet genuine interest, his kind frankness and dependability. Quick with appreciation, but slow to ire; he tolerated no meanness. He counted among his friends men of all stations. I considered myself fortunate to be counted as one of these, and to have been asked to speak tonight, not because of or about any contribution I have made, as former speakers on this occasion, but rather as a humble friend who admired him for himself and enjoyed his confidence and warm friendship.

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